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February 11, 2005

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APPLICATION NUMBER: 60/545,080

FILING DATE: February 17, 2004

By Authority of the
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PROVISIONAL APPLICATION FOR PATENT COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c).

INVENTOR(S)					
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Joseph Tomoyuki Masayuki		McCrossan Okada Kozuka		Burbank, CA Nara City, Japan Arcadia, CA	
<input type="checkbox"/> Additional inventors are being named on the _____ separately numbered sheets attached hereto					
TITLE OF THE INVENTION (280 characters max) SEAMLESS CONNECTION AND SEAMLESS DISPLAY OF GRAPHIC STREAMS					
Direct all correspondence to: CORRESPONDENCE ADDRESS					
<input checked="" type="checkbox"/> Customer Number		21611		<div>Place Customer Number Bar Code Label here</div>	
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ENCLOSED APPLICATION PARTS (check all that apply)					
<input checked="" type="checkbox"/> Specification		Number of Pages 8		<input type="checkbox"/> CD(s), Number	
<input type="checkbox"/> Drawing(s)		Number of Sheets		<input type="checkbox"/> Other (specify)	
<input type="checkbox"/> Application Data Sheet. See 37 CFR 1.76					
METHOD OF PAYMENT OF FILING FEES FOR THIS PROVISIONAL APPLICATION FOR PATENT (check one)					
<input type="checkbox"/> A check or money order is enclosed to		EV336024758US		FILING FEE AMOUNT (\$)	
<input checked="" type="checkbox"/> The Director is hereby authorized to charge filing fees or credit any overpayment to Deposit Account Number		19-2814		\$160.00	
<input type="checkbox"/> Payment by credit card. Form PTO-2038 is attached.					
The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.					
<input checked="" type="checkbox"/> No.					
<input type="checkbox"/> Yes, the name of the U.S. Government agency and the Government contract number are: _____					

Respectfully submitted,

Date 2.17.03

SIGNATURE

REGISTRATION NO.

25,124

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(if appropriate)

Docket Number:

17366-2850

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949-253-4920

USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT

This collection of information is required by 37 CFR 1.51. The information is used by the public to file (and by the PTO to process) a provisional application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 8 hours to complete, including gathering, preparing, and submitting the complete provisional application to the PTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop Provisional Application, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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P19LARGE/REV05

SEAMLESS CONNECTION AND SEAMLESS DISPLAY OF GRAPHIC STREAMS

BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to the field of streaming graphic data and more particularly to seamlessly connecting separate graphic streams.

DESCRIPTION OF RELATED ART

The ETSI EN 300 743 standard defines a conceptual decoder model and the syntax and semantics of a data stream to support Subtitling applications as part of the Digital Video Broadcast standard (DVB-SUB). Within these graphics streams, a description is provided to the decoder regarding the state of the page within the graphics stream (via Epoch Page Change, Normal Case, Acquisition Point values in the "page_state" field).

The BD-ROM High-Definition Movie Mode (HDMV) Graphics format (used in the BD-ROM standard) uses the page state concept from ETSI EN 300 743 in graphics streams.

SUMMARY OF THE INVENTION

As part of the development of the BD-ROM format, the Blu-ray Disc Founders (BDF) are defining the syntax and semantics of data-streams and associated decoding models for presentation graphics (subtitles and other AV synchronized graphics) and interactive graphics (buttons - similar to the highlight functionality of DVD-Video). The DVB-SUB standard is being used as a base in these sections of the BD-ROM format.

This innovation, when applied to BD-ROM presentation graphics streams, provides a framework for an author of a BD title to connect different BD graphics streams together whilst maintaining the display of graphics on screen.

This innovation extends the state model described in ETSI EN 300 743 to provide a means to seamlessly connect two different graphics streams within a BD Title. As the Graphics stream syntax currently stands, every graphics stream must start with a "Mode

Change" page_state (or "Epoch Start" composition_state in BD-ROM graphics streams) - this state instructs the decoder to reset the buffers and remove the graphics display. Due to this restriction, graphics streams cannot be seamlessly connected since each separate graphics stream must start with a state that causes the decoder to reset.

The apparatus is comprised of the following:

1. New state value to define that a decoder shall not reset under conditions where two graphics streams are seamlessly connected. This state value defines that the last Epoch in the first graphics stream and the first Epoch in the second graphics stream are part of the same Epoch.
2. Extension to graphics decoder model to support continuation of Epochs over two separate graphics streams.

BRIEF SUMMARY OF THE INVENTION

Please refer to the attached document for a more detailed description of the innovation.

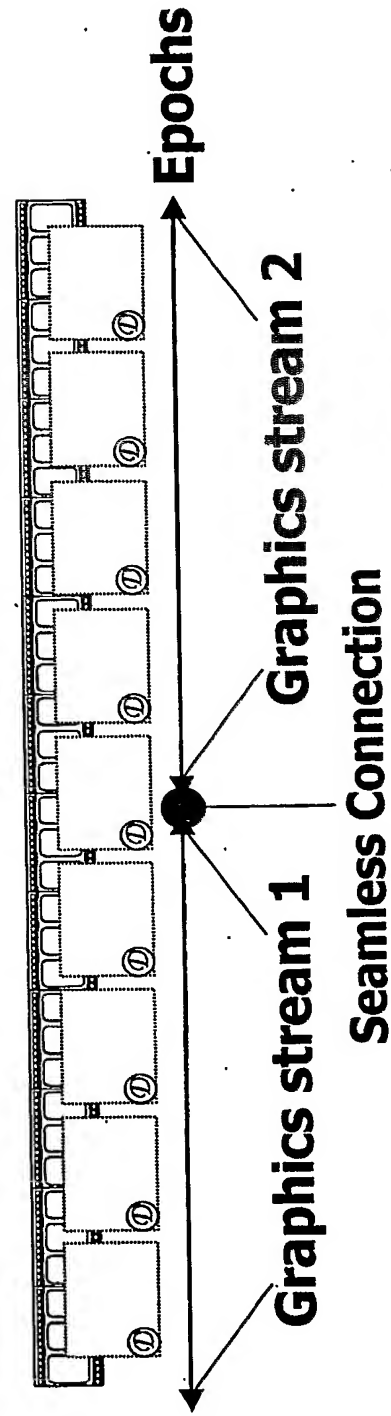
Seamless Connection and Seamless Display of Graphics Streams

Panasonic Hollywood Laboratory

Seamless Connection & Display

□ Overview:

- Point (4) states "Each presentation graphics stream of the TS2 shall start with a Presentation composition segment(PCS) with composition_state set to Epoch start". **This results in a situation where a connection between graphics streams cannot be seamless.**
- Epoch boundaries are not seamless in graphics streams.
- **Epoch Start signals that the decoder must be reset.**
- This means that application images which involve the display of graphics over the seamless connection point cannot be realized.



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Seamless Connection & Display

□ Overview (cont.):

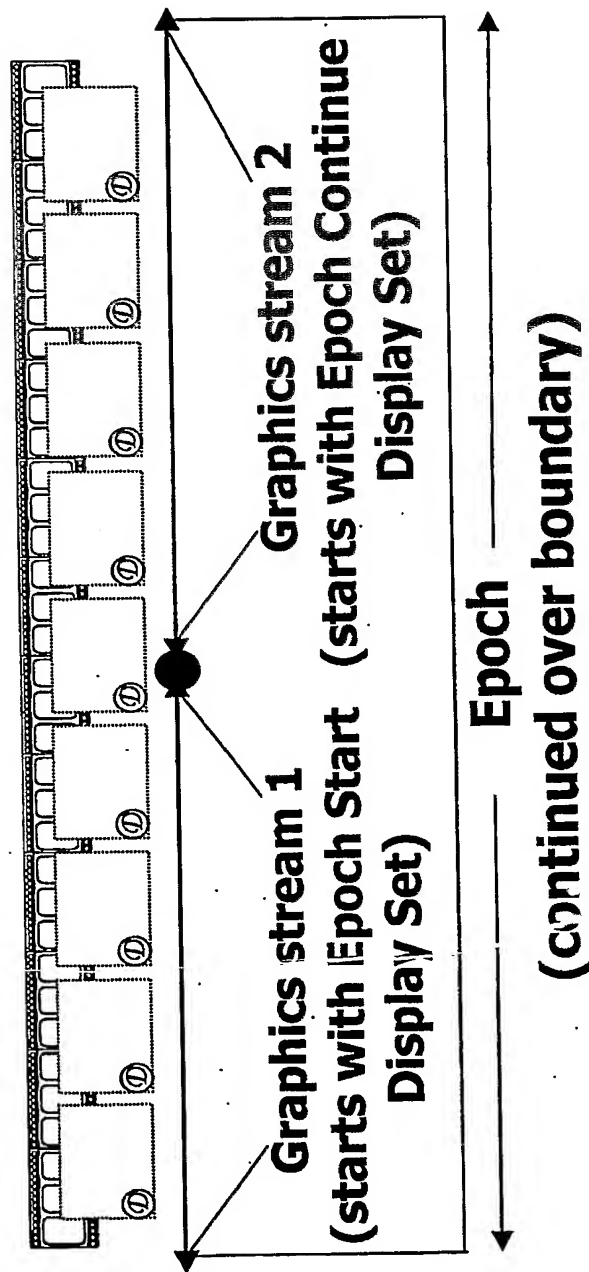
- As the Graphics stream syntax stands we must start every stream with an Epoch Start Composition!
- 1. We need the ability to instruct the decoder to reset (as currently provided by the Epoch Start composition state field value).
- 2. In addition, we also need the ability to instruct the decoder not to reset for seamless connection between two different graphics streams.

Seamless Connection & Display

- ☐ **Solution (Example 1) – use composition_state field:**
 - Currently we have the 2-bit 'composition_state' field in a Composition Segment. This field has the following semantic assignment:
 - ☐ 00b: Normal Case Display Set.
 - ☐ 01b: Acquisition Point Display Set.
 - ☐ 10b: Epoch Start Display Set.
 - ☐ 11b: Reserved.
- 1. **Assign '11b' for the seamless connection case:**
 - ☐ **11b: Epoch Continue Display Set.**
- 2. **Graphics streams shall start with an "Epoch Start" or "Epoch Continue" Display Set.**
 - ☐ The data in both shall be identical, the only difference is with the value of the "composition_state" field.
- 3. **The Graphics decoder shall not reset on an "Epoch Continue" Display Set**
 - ☐ If the decoder has previously acquired the Graphics stream, it shall count this Display Set as part of the current Epoch.

Seamless Connection & Display

□ Solution (Example 1):



Seamless Connection & Display

□ **Solution (Example 2) - combination between high level information can be used.**

- PlayList as scenario description specifies connection condition of Graphics stream
- Combination between PlayItem and composition_state specify connection condition of Graphics stream

